Processor Card Redundancy Commands

Processor card redundancy provides protection against processor card failure. Use the following commands to configure and monitor processor card redundancy operations.

auto-sync counters interface

To enable automatic synchronizing of traffic statistics and performance monitoring counters, and performance history counters on the active processor card to the standby processor card, use the **auto-sync counters interface** command. To disable automatic synchronizing of traffic statistics and performance counters, use the **no** form of this command.

auto-sync counters interface

no auto-sync counters interface

Syntax Description

This command has no other arguments or keywords.

Defaults

Enabled

Command Modes

Redundancy configuration

Command History

This table includes the following release-specific history entries:

SV-Release	Modification
12.2(29)SV	Added support for the automatic syncing of performance history counters.
12.2(24)SV	This command was introduced.

Usage Guidelines

Use this command to enable or disable automatic synchronizing of the traffic statistics, performance monitoring counters, and performance history counters without affecting the following types of synchronization:

- Startup configuration
- Dynamic database synchronizing
- Running configuration

Examples

The following example shows how to disable automatic synchronizing of the traffic statistics and performance counters.

```
Switch# configure terminal
Switch(config)# redundancy
Switch(config-red)# no auto-sync counters interface
```

Related Commands

Command	Description
auto-sync startup-config	Selectively enables only automatic synchronizing of the startup configuration to the standby CPU switch module.
maintenance-mode	Disables all CPU switch module redundancy synchronization.
redundancy	Enters redundancy configuration mode.
redundancy manual-sync	Causes an immediate one-time database update.
show redundancy summary	Displays CPU switch module redundancy status and configuration information.

auto-sync running-config

To selectively enable only automatic synchronizing of the running configuration on the active processor to the standby processor card, use the **auto-sync running-config** command. To disable automatic synchronizing of the running configuration, use the **no** form of this command.

auto-sync running-config

no auto-sync running-config

Syntax Description

This command has no other arguments or keywords.

Defaults

Enabled

Command Modes

Redundancy configuration

Command History

This table includes the following release-specific history entries:

- EY-Release
- E-Release
- EV-Release
- SV-Release
- S-Release

EY-Release	Modification
12.1(7a)EY2	This command was introduced.
E-Release	**Modification**
12.1(11b)E	This command was integrated in this release.
EV-Release	**Modification**
12.1(10)EV	This command was integrated in this release.
SV-Release	**Modification**
12.2(18)SV	This command was integrated in this release.
S-Release	**Modification**
12.2(22)S	This command was integrated in this release from release 12.2(22)SV.

Usage Guidelines

Use this command to enable or disable automatic synchronizing of the running configuration without affecting the following types of synchronization:

- Startup configuration
- Dynamic database synchronizing

When a processor card switchover occurs, the standby processor card normally uses the running configuration rather than the startup configuration. However, if **auto-sync running-config** is disabled when a processor card switchover occurs, the standby processor card uses the startup configuration.

In maintenance mode, all database synchronizing to the standby processor card is disabled even if **auto-sync running-config** is enabled.

Examples

The following example shows how to disable automatic synchronizing of the running configuration.

```
Switch# configure terminal
Switch(config)# redundancy
Switch(config-red)# no auto-sync running-config
```

Related Commands

Command	Description
auto-sync startup-config	Selectively enables only automatic synchronizing of the startup configuration to the standby processor card.
maintenance-mode	Disables all processor card redundancy synchronization.
redundancy	Enters redundancy configuration mode.
redundancy manual-sync	Causes an immediate one-time database update.
show bootvar	Displays boot and other environmental variables.
show redundancy summary	Displays processor card redundancy status and configuration information.

auto-sync startup-config

To selectively enable only automatic synchronizing of the startup configuration to the standby processor card, use the **auto-sync startup-config** command. To disable automatic synchronizing of the startup configuration, use the **no** form of this command.

auto-sync startup-config

no auto-sync startup-config

Syntax Description

This command has no other arguments or keywords.

Defaults

Enabled

Command Modes

Redundancy configuration

Command History

This table includes the following release-specific history entries:

- EY-Release
- E-Release
- EV-Release
- SV-Release
- S-Release

EY-Release	Modification
12.1(7a)EY2	This command was introduced.
E-Release	**Modification**
12.1(11b)E	This command was integrated in this release.
EV-Release	**Modification**
12.1(10)EV	This command was integrated in this release.
SV-Release	**Modification**
12.2(18)SV	This command was integrated in this release.
S-Release	**Modification**
12.2(22)S	This command was integrated in this release from release 12.2(22)SV.

Usage Guidelines

Use this command to enable or disable only automatic synchronizing of the startup configuration without affecting the following synchronization:

- Running configuration
- Dynamic database synchronizing

In maintenance mode, all database synchronizing to the standby processor card is disabled even if **auto-sync startup-config** is enabled.

Examples

The following example shows how to disable automatic synchronizing of the startup configuration.

```
Switch# configure terminal
Switch(config)# redundancy
Switch(config-red)# no auto-sync startup-config
```

Related Commands

Command	Description
auto-sync running-config	Selectively enables only automatic synchronizing of the running configuration to the standby processor card.
maintenance-mode	Disables all processor card redundancy synchronization.
redundancy	Enters redundancy configuration mode.
redundancy manual-sync	Causes an immediate one-time database update.
show bootvar	Displays boot and other environmental variables.
show redundancy summary	Displays processor card redundancy status and configuration information.

clear redundancy

To clear redundancy history or counters, use the **clear redundancy** command.

clear redundancy {**history** | **counters**}

Syntax Description

history	Clears the redundancy event history log.
counters	Clears the redundancy internal operational counters.

Defaults

None

Command Modes

Privileged EXEC

Command History

This table includes the following release-specific history entries:

- EY-Release
- E-Release
- EV-Release
- SV-Release
- S-Release

EY-Release	Modification
12.1(7a)EY2	This command was introduced.
E-Release	**Modification**
12.1(11b)E	This command was integrated in this release.
EV-Release	**Modification**
12.1(10)EV	This command was integrated in this release.
SV-Release	**Modification**
12.2(18)SV	This command was integrated in this release.
S-Release	**Modification**
12.2(22)S	This command was integrated in this release from release 12.2(22)SV.

Usage Guidelines

Use this command to perform a one-time clear of the specified redundancy history or statistics database. This command may be useful for debugging or monitoring redundancy performance.

Examples

The following example shows how to clear the redundancy history log.

```
Switch# clear redundancy history
```

Related Commands

Command	Description
show redundancy counters	Displays redundancy software counter information.
show redundancy history	Displays redundancy software history information.

maintenance-mode

To disable all processor card redundancy synchronization, use the **maintenance-mode** redundancy command. To reenable redundancy synchronization, use the **no** form of this command.

maintenance-mode

no maintenance-mode

Syntax Description

This command has no other arguments or keywords.

Defaults

Disabled

Command Modes

Redundancy configuration

Command History

This table includes the following release-specific history entries:

- EY-Release
- E-Release
- EV-Release
- SV-Release
- S-Release

EY-Release	Modification
12.1(7a)EY2	This command was introduced.
E-Release	**Modification**
12.1(11b)E	This command was integrated in this release.
EV-Release	**Modification**
12.1(10)EV	This command was integrated in this release.
SV-Release	**Modification**
12.2(18)SV	This command was integrated in this release.
S-Release	**Modification**
12.2(22)S	This command was integrated in this release from release 12.2(22)SV.

Usage Guidelines

In maintenance mode, the active processor card does not automatically synchronize information to the standby processor card. No standby processor card errors and alarms are reported to the active processor card. The standby processor card leaves the hot-standby mode, enters the negotiation state, and transitions to the cold-standby state.

When maintenance mode is disabled, the standby processor card reloads until it reaches the hot-standby state.

Maintenance mode is useful for processor card maintenance operations and system image troubleshooting.

Note We do not recommend leaving the active and standby processor cards in maintenance mode for extended periods because any added configuration is lost unless the startup configuration on the active processor card is manually updated and manually synchronized with the standby processor card.

Examples

The following example shows how to enable maintenance mode redundancy.

```
Switch# configure terminal
Switch(config)# redundancy
Switch(config-red)# maintenance-mode
This command will place the system in SIMPLEX mode [confirm] y
```

Related Commands

Command	Description
redundancy	Enters redundancy configuration mode.
show redundancy summary	Displays processor card redundancy status and configuration information.

redundancy

To switch to redundancy configuration mode, use the **redundancy** command.

redundancy

Syntax Description

This command has no other arguments or keywords.

Defaults

None

Command Modes

Global configuration

Command History

This table includes the following release-specific history entries:

- EY-Release
- E-Release
- EV-Release
- SV-Release
- S-Release

EY-Release	Modification
12.1(7a)EY2	This command was introduced.
E-Release	**Modification**
12.1(11b)E	This command was integrated in this release.
EV-Release	**Modification**
12.1(10)EV	This command was integrated in this release.
SV-Release	**Modification**
12.2(18)SV	This command was integrated in this release.
S-Release	**Modification**
12.2(22)S	This command was integrated in this release from release 12.2(22)SV.

Usage Guidelines

Use this command to gain access to both processor card redundancy configuration commands and APS configuration commands.

Examples

The following example shows how to switch to redundancy configuration mode.

```
Switch# configure terminal
Switch(config)# redundancy
Switch(config-red)#
```

Related Commands

Command	Description
associate group	Associates wavepatch interfaces for APS splitter protection.
associate interface	Associates two interfaces for APS protection.
auto-sync running-config	Selectively enables only automatic synchronizing of the running configuration to the standby processor card.
auto-sync startup-config	Selectively enables only automatic synchronizing of the startup configuration to the standby processor card.
maintenance-mode	Enables or disables processor card redundancy synchronization.

redundancy manual-sync

To cause an immediate one-time database update of the specified database information, use the **redundancy manual-sync** command.

redundancy manual-sync {**running-config** | **startup-config** | **both**}

Syntax Description

running-config	Causes an immediate one-time update of the running configuration to the standby processor card.
startup-config	Causes an immediate one-time update of the startup configuration to the standby processor card.
both	Causes an immediate one-time update of the running configuration and the startup configuration to the standby processor card.

Defaults

None

Command Modes

Privileged EXEC

Command History

This table includes the following release-specific history entries:

- EY-Release
- E-Release
- EV-Release
- SV-Release
- S-Release

EY-Release	Modification
12.1(7a)EY2	This command was introduced.
E-Release	**Modification**
12.1(11b)E	This command was integrated in this release.
EV-Release	**Modification**
12.1(10)EV	This command was integrated in this release.
SV-Release	**Modification**
12.2(18)SV	This command was integrated in this release.
S-Release	**Modification**
12.2(22)S	This command was integrated in this release from release 12.2(22)SV.

Usage Guidelines

This command is not usually required because automatic synchronization is enabled by default and, upon exiting global configuration mode, the running configuration is updated on the standby processor card. (Exit global configuration mode by entering **Ctrl-Z** or **end**.) The startup configuration is updated when the **copy** command is issued.

If auto-synchronizing is disabled, the **redundancy manual-sync** command updates the standby processor database information to be identical with the active processor card.

If the system is unable to complete the update, an error message is displayed.

This command is only allowed on the active processor card.

Examples

The following example shows how to make the active processor card send an update for both the running configuration and the startup configuration to the standby processor card.

```
Switch# redundancy manual-sync both
```

Related Commands

Command	Description
auto-sync running-config	Selectively enables only automatic synchronizing of the running configuration to the standby processor card.
auto-sync startup-config	Selectively enables only automatic synchronizing of the startup configuration to the standby processor card.
show redundancy summary	Displays processor card redundancy status and configuration information.

redundancy reload peer

To reload the standby processor card, use the **redundancy reload peer** command.

redundancy reload peer

Syntax Description

This command has no other arguments or keywords.

Defaults

None

Command Modes

Privileged EXEC

Command History

This table includes the following release-specific history entries:

- EY-Release
- E-Release
- EV-Release
- SV-Release
- S-Release

EY-Release	Modification
12.1(7a)EY2	This command was introduced.
E-Release	**Modification**
12.1(11b)E	This command was integrated in this release.
EV-Release	**Modification**
12.1(10)EV	This command was integrated in this release.
SV-Release	**Modification**
12.2(18)SV	This command was integrated in this release.
S-Release	**Modification**
12.2(22)S	This command was integrated in this release from release 12.2(22)SV.

Usage Guidelines

Use this command to reload the standby (or peer) processor card.

The active processor card is allowed to reload a standby processor card that is fully running the Cisco IOS software by using an NMI (non-maskable interrupt).

This command will not succeed on the active processor card if the standby processor card has not fully loaded its system IOS image and reached the hot-standby state.

This command cannot be entered on the standby processor card.

Examples

The following example shows how to reload the standby processor card.

```
Switch# redundancy reload peer
Reload peer [confirm] y
Preparing to reload peer
```

Related Commands

Command	Description
maintenance-mode	Enables or disables processor card redundancy synchronization.
redundancy reload shelf	Reloads both processor cards in the shelf.
redundancy switch-activity	Manually switches activity from the active processor card to the standby processor card.
reload	Reloads the active processor card.
show redundancy summary	Displays processor card redundancy status and configuration information.

redundancy reload shelf

To reload both redundant processor cards, use the **redundancy reload shelf** command.

redundancy reload shelf

Syntax Description

This command has no other arguments or keywords.

Defaults

None

Command Modes

Privileged EXEC

Command History

This table includes the following release-specific history entries:

- EY-Release
- E-Release
- EV-Release
- SV-Release
- S-Release

EY-Release	Modification
12.1(7a)EY2	This command was introduced.
E-Release	**Modification**
12.1(11b)E	This command was integrated in this release.
EV-Release	**Modification**
12.1(10)EV	This command was integrated in this release.
SV-Release	**Modification**
12.2(18)SV	This command was integrated in this release.
S-Release	**Modification**
12.2(22)S	This command was integrated in this release from release 12.2(22)SV.

Usage Guidelines

This command causes both processor cards to reload.

Examples

The following example shows how to reload the entire shelf.

```
Switch# redundancy reload shelf
Reload the entire shelf [confirm] y
Preparing to reload shelf
```

Related Commands

Command	Description
maintenance-mode	Enables or disables processor card redundancy synchronization.
redundancy reload peer	Reloads the standby processor card.
redundancy switch-activity	Manually switches activity from the active processor card to the standby processor card.
reload	Reloads the active processor card.
show redundancy summary	Displays processor card redundancy status and configuration information.

redundancy switch-activity

To manually switch activity from the active processor card to the standby processor card, use the **redundancy switch-activity** command.

redundancy switch-activity [**force**]

Syntax Description

force	Forces a switch of activity even when the standby processor card has not reached the hot-standby state, or if some other software condition is preventing a normal switchover from occurring.

Defaults

The active processor card switches over only if the standby processor card has reached hot-standby mode.

Command Modes

Privileged EXEC

Command History

This table includes the following release-specific history entries:

- EY-Release
- E-Release
- EV-Release
- SV-Release
- S-Release

EY-Release	Modification
12.1(7a)EY2	This command was introduced.
E-Release	**Modification**
12.1(11b)E	This command was integrated in this release.
EV-Release	**Modification**
12.1(10)EV	This command was integrated in this release.
SV-Release	**Modification**
12.2(18)SV	This command was integrated in this release.
S-Release	**Modification**
12.2(22)S	This command was integrated in this release from release 12.2(22)SV.

Usage Guidelines

This command must be issued on the active processor card. It takes effect if the processor card is in a state to allow switchover; that is, the standby processor card is in the “Standby Hot” state and platform software is not temporarily disallowing the switchover.

Examples

The following example shows how to switch activity to the standby processor card.

```
Switch# redundancy switch-activity
Preparing to switch activity
This will reload the active unit and force a switch of activity [confirm] y

01:40:35: %SYS-5-RELOAD: Reload requested
```

Related Commands

Command	Description
maintenance-mode	Enables or disables processor card redundancy synchronization.
redundancy reload peer	Reloads the standby processor card.
redundancy reload shelf	Reloads both processor cards in the shelf.
reload	Reloads the active processor card.
show redundancy summary	Displays processor card redundancy status and configuration information.

show redundancy capability

To display capabilities of the active and standby processor cards, use the **show redundancy capability** command.

show redundancy capability

Syntax Description

This command has no other arguments or keywords.

Defaults

None

Command Modes

Privileged EXEC

Command History

This table includes the following release-specific history entries:

- EY-Release
- E-Release
- EV-Release
- SV-Release
- S-Release

EY-Release	Modification
12.1(7a)EY2	This command was introduced.
E-Release	**Modification**
12.1(11b)E	This command was integrated in this release.
EV-Release	**Modification**
12.1(10)EV	This command was integrated in this release.
SV-Release	**Modification**
12.2(18)SV	This command was integrated in this release.
S-Release	**Modification**
12.2(22)S	This command was integrated in this release from release 12.2(22)SV.

Usage Guidelines

Use this command to display hardware and functional versions of the various components. If the capabilities do not match, the system is running in a degraded redundancy mode.

Examples

The following example shows how to display capabilities for the active and standby processor cards. (See Table 6-1 for field descriptions.)

```
Switch# show redundancy capability

CPU capability support
```

```
 Active CPU  Sby CPU    Sby Compat        CPU capability description
 ---------- ---------- ----------- ---------------------------------------
    96 MB      96 MB   OK          CPU DRAM size
    32 MB      32 MB   OK          CPU PMEM size
   512 KB     512 KB   OK          CPU NVRAM size
    16 MB      16 MB   OK          CPU Bootflash size
    3.5         3.5    OK          CPU hardware major.minor version
    1.20       1.18    OK          CPU functional major.minor version

Linecard driver major.minor versions, (counts: Active=18, Standby=18)

 Active CPU  Sby CPU   Sby Compat  Drv ID     Driver description
 ---------- ---------- ----------- ------ ---------------------------------
    1.1         1.1     OK          0x1000 CPU w/o Switch Fabric
    1.1         1.1     OK          0x1001 Fixed Transponder, w/monitor
    1.1         1.1     OK          0x1002 Fixed Transponder, no monitor
    1.1         1.1     OK          0x1003 Pluggable Transponder, w/monitor
    1.1         1.1     OK          0x1004 Pluggable Transponder, no monitor
    1.1         1.1     OK          0x1005 Line Card Motherboard
    1.1         1.1     OK          0x1006 Backplane
    1.1         1.1     OK          0x1007 32-ch Mux/Demux
    1.1         1.1     OK          0x1008 Fixed 4-ch Mux/Demux, no OSC
    1.1         1.1     OK          0x1009 Fixed 8-ch Mux/Demux, no OSC
    1.1         1.1     OK          0x100A Modular 4-ch Mux/Demux, no OSC
    1.1         1.1     OK          0x100B Modular 8-ch Mux/Demux, no OSC
    1.1         1.1     OK          0x100C 32-ch Array Wave Guide
    1.1         1.1     OK          0x100D Mux/Demux Motherboard
    1.1         1.1     OK          0x100E Modular 4-ch Mux/Demux plus OSC
    1.1         1.1     OK          0x100F Modular 8-ch Mux/Demux plus OSC
    1.1         1.1     OK          0x1010 Mux-Demux Motherboard, no OSC
    1.1         1.1     OK          0x1011 Line Card Motherboard, no splitter

Software sync client versions, listed as version range X-Y.
 X indicates the oldest peer version it can communicate with.
 Y indicates the current sync client version.
 Sync client counts: Active=2, Standby=2

 Active CPU  Sby CPU   Sby Compat  Cl ID  Redundancy Client description
 ---------- ---------- ----------- ----- ------------------------------------
 ver  1-1   ver  1-1   OK          17    CPU Redundancy
 ver  1-1   ver  1-1   OK          6     OIR Client


Backplane IDPROM comparison
 Backplane IDPROM field      Match Local CPU            Peer CPU
 --------------------------- ----- -------------------- --------------------
 idversion                   YES   1                    1
 magic                       YES   153                  153
 card_type                   YES   4102                 4102
 order_part_num_str          YES   N/A                  N/A
 description_str             YES   Manhattan_Backplane_PHASE_0
                                                        Manhattan_Backplane_PHASE_0
 board_part_num_str          YES   73-5655-03           73-5655-03
 board_revision_str          YES   02                   02
 serial_number_str           YES   TBC05031572          TBC05031572
 date_of_manufacture_str     YES   02/16/2001           02/16/2001
 deviation_numbers_str       YES   0                    0
 manufacturing_use           YES   0                    0
 rma_number_str              YES   0x00                 0x00
 rma_failure_code_str        YES   0x00                 0x00
 oem_str                     YES   Cisco_Systems        Cisco_Systems
 clei_str                    YES
 snmp_oid_substr             NO    0
```

```
schematic_num_str           YES   92-4113-03          92-4113-03
hardware_major_version      YES   3                   3
hardware_minor_version      YES   0                   0
engineering_use_str         YES   1                   1
crc16                       OK    5913                24184
user_track_string           NO    lab
diagst                      YES   ^A                   ^A
board_specific_revision     YES   1                   1
board_specific_magic_number YES   153                 153
board_specific_length       YES   56                  56
mac_address_block_size      YES   16                  16
mac_address_base_str        YES   0000164428fb0       0000164428fb0
cpu_number                  OK    1                   1
optical_backplane_type      YES   255                 255
```

Table 6-1 show redundancy capability Field Descriptions

Field	Description
Active CPU	Shows the following information for the active processor card: • processor DRAM size—the size of dynamic random access memory • processor PMEM size—the amount of dynamic RAM reserved for packet I/O usage • processor NVRAM size—the size of nonvolatile RAM • processor Bootflash size—the size of bootflash memory • processor hardware major.minor version—the processor card hardware version • processor functional major.minor version—the processor card functional version
Sby CPU	Shows information for the standby processor card. See the "Active CPU" description above.
Sby Compat	Indicates whether the standby processor card is compatible with the active processor card.
CPU capability description	Shows the capability descriptions for the active and standby processor cards. See the "Active CPU" description above.
Linecard driver major.minor versions	Shows the number of line card drivers.
Drv ID	Shows the driver ID.
Driver description	Shows the driver description.
Software sync client versions	Shows the redundancy client version in the range X-Y, where: • X indicates the oldest peer version it can communicate with. • Y indicates the current sync client version. Also shows the sync client counts.
Cl ID	Shows the client ID.
Redundancy Client description	Shows the redundancy client descriptions.

Related Commands

Command	Description
redundancy	Switches to redundancy configuration mode.
redundancy manual-sync	Causes an immediate one-time update of the specified database.
redundancy reload peer	Reloads the redundant peer processor card.
redundancy reload shelf	Reloads both redundant processor cards in the shelf.
redundancy switch-activity	Manually switches activity from the active processor card to the current standby processor card.
show redundancy summary	Displays processor card redundancy status and configuration information.

show redundancy clients

To display a list of internal redundancy clients, use the **show redundancy clients** command.

show redundancy clients

Syntax Description

This command has no other arguments or keywords.

Defaults

None

Command Modes

EXEC and privileged EXEC

Command History

This table includes the following release-specific history entries:

- EY-Release
- E-Release
- EV-Release
- SV-Release
- S-Release

EY-Release	Modification
12.1(7a)EY2	This command was introduced.
E-Release	**Modification**
12.1(11b)E	This command was integrated in this release.
EV-Release	**Modification**
12.1(10)EV	This command was integrated in this release.
SV-Release	**Modification**
12.2(18)SV	This command was integrated in this release.
S-Release	**Modification**
12.2(22)S	This command was integrated in this release from release 12.2(22)SV.

Usage Guidelines

Use this command to display information about the software subsystems that are clients of the platform-independent RF (Redundancy Facility) subsystem. Subsystems that need to synchronize information from the active processor card to the standby processor card (or vice versa) are registered as clients of the RF.

This client information can be used to debug redundancy software.

Examples

The following example shows how to display a list of internal redundancy clients. (See Table 6-2 for field descriptions.)

```
Switch# show redundancy clients
 clientID = 0      clientSeq = 0        RF_INTERNAL_MSG
 clientID = 6      clientSeq = 16       OIR Client
 clientID = 17     clientSeq = 40       CPU Redundancy
 clientID = 19     clientSeq = 9999     RF_LAST_CLIENT
```

Table 6-2 show redundancy clients Field Descriptions

Field	Description
clientID	Shows the ID of the redundant client.
clientSeq	Shows the client notification sequence number. Client sequence numbers determine the order in which a client is notified of RF events, relative to other clients. There are cases where one client must be notified before another. This should be noted when the sequence number is defined. The lower sequence numbers are notified first.
RF_INTERNAL_MSG	Shows the RF first client, which is part of the RF subsystem and is necessary for its operation.
OIR Client	Shows the OIR (online insertion and removal) client, which updates the standby processor card when line cards are inserted and removed.
CPU Redundancy	Shows the processor card redundancy client, which sends running or startup configuration changes to the standby processor card. This client also reports hardware/software compatibility and version numbers between the processor cards. It also ensures that processor card arbitration changes and peer processor card communication losses are reported to the RF and to other subsystems.
RF_LAST_CLIENT	Shows the RF last client, which is part of the RF subsystem and is necessary for its operation.

Related Commands

Command	Description
redundancy	Switches to redundancy configuration mode.
redundancy manual-sync	Causes an immediate one-time update of the specified database.
redundancy reload peer	Reloads the redundant peer processor card.
redundancy reload shelf	Reloads both redundant processor cards in the shelf.
redundancy switch-activity	Manually switches activity from the active processor card to the current standby processor card.
show redundancy summary	Displays processor card redundancy status and configuration information.

show redundancy counters

To display internal redundancy software counters, use the **show redundancy counters** command.

show redundancy counters

Syntax Description

This command has no other arguments or keywords

Defaults

None

Command Modes

Privileged EXEC

Command History

This table includes the following release-specific history entries:

- EY-Release
- E-Release
- EV-Release
- SV-Release
- S-Release

EY-Release	Modification
12.1(7a)EY2	This command was introduced.
E-Release	**Modification**
12.1(11b)E	This command was integrated in this release.
EV-Release	**Modification**
12.1(10)EV	This command was integrated in this release.
SV-Release	**Modification**
12.2(18)SV	This command was integrated in this release.
S-Release	**Modification**
12.2(22)S	This command was integrated in this release from release 12.2(22)SV.

Usage Guidelines

Use this command to display internal redundancy software counter information, which can be used to debug redundancy software.

Examples

The following example shows how to display internal redundancy software counter information. (See Table 6-3 for field descriptions.)

```
Switch# show redundancy counters
Redundancy Facility OMs
               comm link up = 1
        comm link down down = 0
```

```
          invalid client tx = 0
          null tx by client = 0
                tx failures = 0
      tx msg length invalid = 0

      client not rxing msgs = 0
rx peer msg routing errors = 0
           null peer msg rx = 0
         errored peer msg rx = 0

                 buffers tx = 656
     tx buffers unavailable = 0
                 buffers rx = 1302
      buffer release errors = 0

duplicate client registers = 0
 failed to register client = 0
      Invalid client syncs = 0
```

Table 6-3 show redundancy counters Field Descriptions

Field	Description
comm link up	Shows how many communications links are up.
comm link down down	Shows how many communications links are down.
invalid client tx	Shows the number of invalid client transmissions.
null tx by client	Shows the number of null transmissions by the client.
tx failures	Shows the number of transmission failures.
tx msg length invalid	Shows the number of transmission messages with invalid lengths.
client not rxing msgs	Shows that the client is not receiving event messages.
rx peer msg routing errors	Shows errors occurring in the RF application. This usually indicates a software problem.
null peer msg rx	Shows that the interprocess communication (IPC) has sent an empty message to the RF application. This usually indicates a software problem.
errored peer msg rx	Shows an IPC error when an RF message was received. This usually indicates a software problem.
buffers tx	Shows the number of internal buffers acquired for sending RF messages.
tx buffers unavailable	Shows the number of times internal buffers for sending RF messages were not available due to the high volume of messages being sent. This usually indicates a software problem.
buffers rx	Shows the number of buffers released back to the internal buffer pool.
buffer release errors	Shows errors in releasing internal buffers.
duplicate client registers	Shows that an application has been registered with the RF more than once. This usually indicates a software problem.
failed to register client	Shows that the system was unable to register an RF client application due to low memory or due to a software problem.
Invalid client syncs	Shows an internal software problem in the RF.

Related Commands

Command	Description
redundancy	Switches to redundancy configuration mode.
redundancy manual-sync	Causes an immediate one-time update of the specified database.
redundancy reload peer	Reloads the standby processor card.
redundancy reload shelf	Reloads both redundant processor cards in the shelf.
redundancy switch-activity	Manually switches activity from the active processor card to the current standby processor card.
show redundancy summary	Displays processor card redundancy status and configuration information.

show redundancy history

To display internal redundancy software history, use the **show redundancy history** command.

show redundancy history

Syntax Description

This command has no other arguments or keywords.

Defaults

None

Command Modes

EXEC and privileged EXEC

Command History

This table includes the following release-specific history entries:

- EY-Release
- E-Release
- EV-Release
- SV-Release
- S-Release

EY-Release	Modification
12.1(7a)EY2	This command was introduced.
E-Release	**Modification**
12.1(11b)E	This command was integrated in this release.
EV-Release	**Modification**
12.1(10)EV	This command was integrated in this release.
SV-Release	**Modification**
12.2(18)SV	This command was integrated in this release.
S-Release	**Modification**
12.2(22)S	This command was integrated in this release from release 12.2(22)SV.

Usage Guidelines

Use this command to display the internal redundancy software history log, which can be used to debug redundancy software.

Examples

The following example shows how to display the internal redundancy software history log, which can be useful for debugging redundancy software. (See Table 6-4 for field descriptions.)

```
Switch# show redundancy history
Redundancy Facility Event Log:
00:00:00 client added: RF_INTERNAL_MSG(0) seq=0
00:00:00 client added: RF_LAST_CLIENT(19) seq=9999
```

```
00:00:16 client added: CPU Redundancy(17) seq=40
00:00:16 *my state = INITIALIZATION(2) *peer state = DISABLED(1)
00:00:16 RF_PROG_INITIALIZATION(0) RF_INTERNAL_MSG(0) op=0 rc=11
00:00:16 RF_PROG_INITIALIZATION(0) CPU Redundancy(17) op=0 rc=11
00:00:16 RF_PROG_INITIALIZATION(0) RF_LAST_CLIENT(19) op=0 rc=11
00:00:16 *my state = NEGOTIATION(3) peer state = DISABLED(1)
00:00:16 RF_STATUS_PEER_PRESENCE(12) op=0
00:00:16 RF_EVENT_GO_ACTIVE(28) op=0
00:00:16 *my state = ACTIVE-FAST(9) peer state = DISABLED(1)
00:00:16 RF_STATUS_SPLIT_ENABLE(15) CPU Redundancy(17) op=0
00:00:16 RF_PROG_ACTIVE_FAST(6) RF_INTERNAL_MSG(0) op=0 rc=11
00:00:16 RF_PROG_ACTIVE_FAST(6) CPU Redundancy(17) op=0 rc=11
00:00:16 RF_PROG_ACTIVE_FAST(6) RF_LAST_CLIENT(19) op=0 rc=11
00:00:16 *my state = ACTIVE-DRAIN(10) peer state = DISABLED(1)
00:00:16 RF_PROG_ACTIVE_DRAIN(7) RF_INTERNAL_MSG(0) op=0 rc=11
00:00:16 RF_PROG_ACTIVE_DRAIN(7) CPU Redundancy(17) op=0 rc=11
00:00:16 RF_PROG_ACTIVE_DRAIN(7) RF_LAST_CLIENT(19) op=0 rc=11
00:00:16 *my state = ACTIVE_PRECONFIG(11) peer state = DISABLED(1)
00:00:16 RF_PROG_ACTIVE_PRECONFIG(8) RF_INTERNAL_MSG(0) op=0 rc=11
00:00:16 RF_PROG_ACTIVE_PRECONFIG(8) CPU Redundancy(17) op=0 rc=11
00:00:16 RF_PROG_ACTIVE_PRECONFIG(8) RF_LAST_CLIENT(19) op=0 rc=11
00:00:16 *my state = ACTIVE_POSTCONFIG(12) peer state = DISABLED(1)
00:00:16 RF_PROG_ACTIVE_POSTCONFIG(9) RF_INTERNAL_MSG(0) op=0 rc=11
00:00:16 RF_PROG_ACTIVE_POSTCONFIG(9) CPU Redundancy(17) op=0 rc=11
00:00:16 RF_PROG_ACTIVE_POSTCONFIG(9) RF_LAST_CLIENT(19) op=0 rc=11
00:00:16 *my state = ACTIVE(13) peer state = DISABLED(1)
00:00:16 RF_PROG_ACTIVE(10) RF_INTERNAL_MSG(0) op=0 rc=11
00:00:16 RF_PROG_ACTIVE(10) CPU Redundancy(17) op=0 rc=11
00:00:16 RF_PROG_ACTIVE(10) RF_LAST_CLIENT(19) op=0 rc=11
00:00:16 client added: OIR Client(6) seq=16
00:00:19 RF_STATUS_PEER_PRESENCE(12) op=0
00:00:36 Configuration parsing complete
00:00:36 System initialization complete
```

Table 6-4 show redundancy history Field Descriptions

Field	Description
client added	Shows the RF subsystem client added.
*my state = INITIALIZATION	Shows that the processor card has been initialized.
*peer state = DISABLED	Shows that the peer (or standby) processor card is disabled.
Configuration parsing complete	Shows that the configuration has been read either from NVRAM or, on a switchover, from the stored running-config file.
System initialization complete	Shows that the system initialization is complete.

Related Commands

Command	Description
clear redundancy	Clears the redundancy history buffer in processor memory.
redundancy	Switches to redundancy configuration mode.
redundancy manual-sync	Causes an immediate one-time update of the specified database.
redundancy reload peer	Reloads the standby processor card.
redundancy reload shelf	Reloads both redundant processor cards in the shelf.

Command	Description
redundancy switch-activity	Manually switches activity from the active processor card to the current standby processor card.
show redundancy summary	Displays processor card redundancy status and configuration information.

show redundancy running-config-file

To display the running configuration on the standby processor card, use the **show redundancy running-config-file** command.

show redundancy running-config-file

Syntax Description

This command has no other arguments or keywords.

Defaults

None

Command Modes

EXEC and privileged EXEC

Command History

This table includes the following release-specific history entries:

- EY-Release
- E-Release
- EV-Release
- SV-Release
- S-Release

EY-Release	Modification
12.1(7a)EY2	This command was introduced.
E-Release	**Modification**
12.1(11b)E	This command was integrated in this release.
EV-Release	**Modification**
12.1(10)EV	This command was integrated in this release.
SV-Release	**Modification**
12.2(18)SV	This command was integrated in this release.
S-Release	**Modification**
12.2(22)S	This command was integrated in this release from release 12.2(22)SV.

Usage Guidelines

This command is only available on the standby processor card. It shows the stored running-config file that has been synchronized from the active processor card, which will be applied as the system configuration during the next standby to active transition.

If auto-synchronization is disabled for the running-config-file on the active processor card, or if the IPC (interprocessor communications) is down, this command displays the message `running-config-file is not currently valid` and does not show the running-config-file.

Note While the standby processor card remains in the hot-standby state, the running configuration, as shown by the **show running-config** command, is not expected to match the synchronized running-config file. Instead, it contains mostly default configuration values.

Examples

The following example displays the running-config file on the standby processor card.

```
sby-Switch# show redundancy running-config-file
!
version 12.1
no service pad
service timestamps debug uptime
service timestamps log uptime
no service password-encryption
!
hostname Switch
!
boot system flash bootflash:ons15540-i-mz
boot bootldr slot0:ons15540-i-mz

<Information deleted>
```

Table 6-5 show redundancy running-config-file Field Descriptions

Field	Description
version	Shows the software version.
no service pad	Shows service pad configuration. In the output example, “no” indicates that incoming and outgoing packet assembler/disassembler (PAD) connections are not accepted.
service timestamps	Shows that logging appears with timestamps.
no service password-encryption	Shows that password encryption has been disabled.
hostname	Shows the system name.
boot system flash	Shows the boot system flash version.
boot bootldr	Shows the bootldr version.

Related Commands

Command	Description
redundancy	Switches to redundancy configuration mode.
redundancy manual-sync	Causes an immediate one-time update of the specified database.
redundancy reload peer	Reloads the redundant peer processor card.
redundancy reload shelf	Reloads both redundant processor cards in the shelf.
redundancy switch-activity	Manually switches activity from the active processor card to the current standby processor card.
show redundancy summary	Displays processor card redundancy status and configuration information.

show redundancy states

To display internal redundancy software state information, use the **show redundancy states** command.

show redundancy states

Syntax Description

This command has no other arguments or keywords.

Defaults

None

Command Modes

EXEC and privileged EXEC

Command History

This table includes the following release-specific history entries:

- EY-Release
- E-Release
- EV-Release
- SV-Release
- S-Release

EY-Release	Modification
12.1(7a)EY2	This command was introduced.
E-Release	**Modification**
12.1(11b)E	This command was integrated in this release.
EV-Release	**Modification**
12.1(10)EV	This command was integrated in this release.
SV-Release	**Modification**
12.2(18)SV	This command was integrated in this release.
S-Release	**Modification**
12.2(22)S	This command was integrated in this release from release 12.2(22)SV.

Usage Guidelines

Use this command to display internal redundancy software state information, which may be used to debug redundancy software.

Examples

The following example shows how to display internal redundancy software state information. (See Table 6-6 for field descriptions.)

```
Switch> show redundancy states
       my state = 13 -ACTIVE
     peer state = 8  -STANDBY HOT
           Mode = Duplex
```

```
       Unit ID = 6

    Split Mode = Disabled
  Manual Swact = Enabled
Communications = Up

  client count = 5
client_notification_TMR = 30000 milliseconds
         keep_alive TMR = 5000 milliseconds
        keep_alive count = 1
   keep_alive threshold = 10
          RF debug mask = 0x0
```

Table 6-6 show redundancy states Field Descriptions

Field	Description
my state	Shows the state of the active processor card.
peer state	Shows the state of the peer (or standby) processor card.
Mode	Shows either simplex (single processor card) or duplex (two processor cards) mode.
Unit	Shows either primary (or active) processor card or peer (or standby) processor card.
Unit ID	Shows the unit ID of the processor card.
Split Mode	Indicates whether split mode is enabled or disabled.
Manual Swact	Indicates whether manual switchovers have been enabled without the force option.
Communications	Indicates whether communications are up or down between the two processor cards.
client count	Shows the number of redundancy subsystems that are registered as RF clients.
client_notification_TMR	Shows, in milliseconds, the time that an internal RF timer has for notifying RF client subsystems.
keep_alive TMR	Shows, in milliseconds, the time interval the RF manager has for sending keep-alive messages to its peer on the standby processor card.
keep_alive count	Shows the number of keep-alive messages sent without receiving a response from the standby processor card.
keep_alive threshold	Shows the threshold for declaring that interprocessor communications are down when keep-alive messages have been enabled (which is the default).
RF debug mask	Shows an internal mask used by the RF to keep track of which debug modes are on.

Related Commands

Command	Description
redundancy	Switches to redundancy configuration mode.
redundancy manual-sync	Causes an immediate one-time update of the specified database.
redundancy reload peer	Reloads the redundant standby processor card.
redundancy reload shelf	Reloads both redundant processor cards in the shelf.

Command	Description
redundancy switch-activity	Manually switches activity from the active processor card to the current standby processor card.
show redundancy summary	Displays processor card redundancy status and configuration information.

show redundancy summary

To display a summary of active and standby processor card redundancy information, use the **show redundancy summary** command.

show redundancy summary

Syntax Description

This command has no other arguments or keywords.

Defaults

None

Command Modes

EXEC and privileged EXEC

Command History

This table includes the following release-specific history entries:

- EY-Release
- E-Release
- EV-Release
- SV-Release
- S-Release

EY-Release	Modification
12.1(7a)EY2	This command was introduced.
E-Release	**Modification**
12.1(11b)E	This command was integrated in this release.
EV-Release	**Modification**
12.1(10)EV	This command was integrated in this release.
SV-Release	**Modification**
12.2(18)SV	This command was integrated in this release and added the required keyword **summary**.
S-Release	**Modification**
12.2(22)S	This command was integrated in this release from release 12.2(22)SV.

Usage Guidelines

Use this command to display a summary of redundancy-related information, including active and standby slots, uptimes, images, and current alarms. This information is useful for troubleshooting processor card redundancy problems.

Examples

The following example shows how to display a summary of redundancy-related information for the system. (See Table 6-7 for field descriptions.)

```
Switch# show redundancy summary


Redundant system information
-----------------------------
Available Uptime:             12 minutes
Time since last switchover:   6 minutes
Switchover Count:             2

Inter-CPU Communication State:UP
Last Restart Reason:          Switch over
Reported Switchover Reason:   User initiated
Software state at switchover: STANDBY HOT

Last Running Config sync:     2 minutes
Running Config sync status:   In Sync
Last Startup Config sync:     2 minutes
Startup Config sync status:   In Sync

This CPU is the Active CPU.
-------------------------------
Slot:                         6
Time since CPU Initialized:   8 minutes
Image Version:                ONS-15540 Software (ONS15540-I-M), Experimental Version
12.1(20010824:021324) [ffrazer-lh2 106]
Image File:                   tftp://171.69.1.129/ffrazer/ons15540-i-mz
Software Redundancy State:    ACTIVE
Hardware State:               ACTIVE
Hardware Severity:            0

Peer CPU is the Standby CPU.
-------------------------------
Slot:                         7
Time since CPU Initialized:   2 minutes
Image Version:                ONS-15540 Software (ONS15540-I-M), Experimental Version
12.1(20010824:021324) [ffrazer-lh2 106]
Image File (on sby-CPU):      tftp://171.69.1.129/ffrazer/ons15540-i-mz
Software Redundancy State:    STANDBY HOT
Hardware State:               STANDBY
Hardware Severity:            0
```

Table 6-7 show redundancy summary Field Descriptions

Field	Description
Available Uptime	Shows the elapsed time since the system began providing uninterrupted operation, including the time when either processor card is active.
Time since last switchover	Shows the amount of time since the last switchover.
Switchover Count	Shows the number of times switchover has occurred during the Available Uptime.
Inter-CPU Communication State	Shows the status of IPC (interprocess communications).
Last Restart Reason	Shows the reason for the last restart. Valid reasons include normal boot and switchover.

Table 6-7 show redundancy summary Field Descriptions (continued)

Field	Description
Last Switchover Reason	Shows the reason for the last switchover when the Last Restart Reason field shows "Switch over." Valid reasons are: • Not known • User initiated • User forced • User forced (reload) • Active unit failed • Active unit removed
Software state at switchover	Shows the software redundancy state of the processor at the time of the last switchover.
Last Running Config sync	Shows the amount of time since the processor card was synchronized with the last running configuration.
Running Config sync status	Indicates whether the processor card is in sync with the running configuration.
Last Startup Config sync	Shows the amount of time since the processor card was synchronized with the last startup configuration.
Startup Config sync status	Indicates whether the processor card is in sync with the startup configuration.
Slot	Shows the slot number on the active or standby system.
Time since CPU Initialized	Shows the amount of time since the active or standby processor card was last initialized.
Image	Shows the active or standby processor card system image and version.
Software Redundancy State	Indicates whether software redundancy is enable for the active and standby processor card.
Hardware State	Shows the hardware state of the active or standby processor card.
Hardware Severity	Shows the severity of hardware faults. Valid values are: • 0 = good processor card hardware (no hardware faults) • 1 = processor card hardware fault that does not affect traffic • 2 = fault that partially affects traffic • 3 = fault that may affect all user data traffic

Related Commands

Command	Description
redundancy	Switches to redundancy configuration mode.
redundancy manual-sync	Causes an immediate one-time update of the specified database.
redundancy reload peer	Reloads the redundant peer processor card.
redundancy reload shelf	Reloads both redundant processor cards in the shelf.
redundancy switch-activity	Manually switches activity from the active processor card to the current standby processor card.
show redundancy capability	Displays processor card redundancy capability information.

standby privilege-mode enable

To enable access to privileged EXEC mode from the standby CPU switch module CLI, use the **standby privilege-mode enable** command. To revert to the default state, use the **no** form of the command.

standby privilege-mode enable

no standby privilege-mode enable

Syntax Description

This command has no other arguments or keywords.

Defaults

Disabled

Command Modes

Redundancy configuration

Command History

Release	Modification
12.1(10)EV2	This command was introduced.

Command History

This table includes the following release-specific history entries:

- EV-Release
- SV-Release
- S-Release

EV-Release	Modification
12.1(10)EV2	This command was introduced.
SV-Release	**Modification**
12.2(18)SV	This command was integrated in this release.
S-Release	**Modification**
12.2(22)S	This command was integrated in this release from release 12.2(22)SV.

Usage Guidelines

This command must be entered on the active CPU switch module CLI before you can access privileged EXEC mode on the standby CPU switch module CLI.

Examples

The following example shows how to enable access to privileged EXEC mode on the standby CPU switch processor module.

```
Switch(config-red)# standby privilege-mode enable
```

Related Commands

Command	Description
show redundancy summary	Displays CPU switch module redundancy status and configuration information.